



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,201	10/20/2003	Kenneth A. Stewart	CS23403RL	4413
20280	7590	04/19/2006	EXAMINER	
MOTOROLA INC			KIM, KEVIN	
600 NORTH US HIGHWAY 45			ART UNIT	
ROOM AS437			PAPER NUMBER	
LIBERTYVILLE, IL 60048-5343			2611	

DATE MAILED: 04/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/689,201

Applicant(s)

STEWART ET AL.

Examiner

Kevin Y. Kim

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6,9-13 and 16-26 is/are rejected.
- 7) ☒ Claim(s) 7,8,14,15,27 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's arguments filed on 2-1-2006 have been fully considered but they are not persuasive.

Claims 1, 20 and 21 have been amended such that the first and second decision statistic are generated "using an embedded interference-canceling algorithm." An embodiment of the claimed embedded interference-canceling algorithm is described in the present specification to use a training sequence. See page 3, 3rd paragraph. Because Khullar et al also teaches generating a correlation quality measure (reading on the decision statistic) using a training sequence for modulation detection, it is seen that the correlation quality is generated using an embedded interference-canceling algorithm in the Khullar et al' patent, just like the claims.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 102

3. Claims 1-6,9-13 and 16-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Khullar et al (US 6,400,928, previously cited).

Claim 1.

Khuller et al disclose a modulation detection device and method, see Fig.4, comprising;

receiving a signal (64),

generating a first decision statistic based on the received signal (70(1)),

phase rotating the received signal (68(n)),

generating a second decision statistic based on the phase rotated received signal (70(n)) and

determining a modulation type (either GMSK or 8-PSK) based on comparing the first decision statistic with the second decision statistic (72). See col. 8, lines 59-67.

It should be noted that the limitation “generating a first decision statistic based on the received signal” does not specifically exclude a case a first decision statistic is generated on a phase rotated received signal because a received “based on” which the first decision statistic is generated includes both the received signal prior to a phase rotation signal and the received signal after the phase rotation.

In addition, because Khullar et al also generate a correlation quality measure (reading on the decision statistic) using a training sequence for modulation detection, it is seen that the correlation quality is generated using an embedded interference-canceling algorithm in the Khullar et al’ patent, just like the claims.

Claims 2, 3.

Khullar et al disclose generating a training sequence (reading on “an observation matrix,) from the received signal in order to correlate with an expected training sequence to generate correlations.

Claim 4.

Khullar et al teaches that a modulation type having a highest correlation value is selected as the modulation type used at the transmitter. In other words, the decision statistics

Art Unit: 2611

corresponding to hypothetical modulation types are compared with each other and a desired modulation is determined to be a first modulation type if the first decision statistic is less than or equal to the second decision statistic and vice versa, and a second modulation type if the second decision statistic is less than the first decision statistic.

Claim 5.

See col. 6, lines 52-56 describing the selected modulation type being either GMSK or 8PSK.

Claim 6.

Khullar et al disclose generating the first decision statistic based on four bursts. See col. 8, lines 30-34. The four bursts are known to comprise a radio link control block.

Claims 9.

Khuller et al disclose a modulation detection device and method, see Fig.4, comprising;

receiving a signal (64),

constructing a first decision statistic based on the received signal (70(1)) based on a first hypothesized modulation type including interference suppression,

constructing a second decision statistic based on the phase rotated received signal (70(n)) and based on a second hypothesized modulation type including interference suppression,

identifying a selected modulation type (either GMSK or 8-PSK) based on comparing the first decision statistic with the second decision statistic (72). See col. 8, lines 59-67.

Claim 10 and 11.

See col. 6, lines 52-56 describing the selected modulation type being either GMSK or 8PSK.

Claims 12 and 13.

Khullar et al teaches phase rotating the received signal (68(n)) and the second decision statistic is generated on the phase rotated signal (thus transformed received signal).

Claim 16.

Khullar et al teaches that a modulation type having a highest correlation value is selected as the modulation type used at the transmitter. In other words, the decision statistics corresponding to hypothetical modulation types are compared with each other and a desired modulation is determined to be a first modulation type if the first decision statistic is less than or equal to the second decision statistic and vice versa, and a second modulation type if the second decision statistic is less than the first decision statistic.

Claims 17 and 18.

See col. 6, lines 52-56 describing the selected modulation type being either GMSK or 8PSK.

Claim 19.

Khullar et al disclose generating the first decision statistic based on four bursts. See col. 8, lines 30-34. The four bursts are known to comprise a radio link control block.

Claim 20.

Khuller et al disclose a modulation detection method, see Fig.4, comprising;

receiving a signal (64),
generating a first observation matrix (training sequence) from the received signal,
computing a first decision statistic (correlation) based on the received signal
(70(1)),
phase rotating the received signal (68(n)),
generating a second observation matrix (training sequence) from the received
signal
computing a second decision statistic (correlation) based on the phase rotated
received signal (70(n)) and
determining a modulation type to be GMSK if the first statistic is less than or
equal to the second statistic, and 8-PSK if the second statistic is less than the first
statistic. See col. 8, lines 59-67.

Claim 21.

Khuller et al disclose a modulation detection device, see Fig.4, comprising;

Art Unit: 2611

a receiver (64) to receive a signal ,

a modulating detector including;

a first decision statistic generator (70(1)) for generating a first decision statistic based on the received signal,

a phase rotator (68(n)) to phase rotate the received signal,

a second decision statistic generator (70(n)) for generating a second decision statistic based on the phase rotated received signal and

a determination module (72) for determining a modulation type (either GMSK or 8-PSK) based on comparing the first decision statistic with the second decision statistic (72). See col. 8, lines 59-67.

In addition, because Khullar et al also generate a correlation quality measure (reading on the decision statistic) using a training sequence for modulation detection, it is seen that the correlation quality is generated using an embedded interference-canceling algorithm in the Khullar et al' patent, just like the claims.

Claims 22 and 23.

Khullar et al disclose generating a training sequence (reading on "an observation matrix,) from the received signal in order to correlate with an expected training sequence to generate correlations.

Claims 24 and 25.

The determination module (72) determining a desired modulation to be GMSK if the first statistic is less than or equal to the second statistic, and to be 8-PSK if the second statistic is less than the first statistic. See col.5, lines 16-47 and col. 8, lines 59-67.

Art Unit: 2611

Claim 26.

Khullar et al disclose generating the first decision statistic based on four bursts. See col. 8, lines 30-34. The four bursts are known to comprise a radio link control block.

Allowable Subject Matter

3. Claims 7,8,14,15,27 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Y. Kim whose telephone number is 571-272-3039. The examiner can normally be reached on 8AM --5PM M-F.

Art Unit: 2611

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

April 17, 2006



KEVIN KIM
PATENT EXAMINER